

CLINICAL INVESTIGATION

A SURVEY OF THE IMPACT OF DRIVING CESSATION ON OLDER DRIVERS

NAHID AZAD, MD, FRCPC^{1,5}; ANNA BYSZEWSKI, MD, FRCPC^{1,5}; STEPHANIE AMOS, PHD²; FRANK J. MOLNAR, MSC, MDCM, FRCPC^{1,3,4,5}

¹Division of Geriatric Medicine, University of Ottawa; ²Regional Geriatric Assessment Program of Ottawa; ³University of Ottawa Institute on Health of the Elderly associated with SCO Health Services; ⁴Clinical Epidemiology Unit, University of Ottawa Health Research Institute; ⁵The Ottawa Hospital, Ottawa, ON

Background: North American seniors have become increasingly dependent on the private automobile as their primary means of transportation. Numerous studies have identified factors such as the progression of a dementia which place some older drivers at higher than average risk of becoming involved in motor vehicle crashes. Unfortunately, recent research also suggests that cessation of driving may contribute to social isolation and possibly depression. This survey assessed the impact of driving cessation on older drivers who had attended a memory disorder clinic and had received instructions to cease driving.

Methods: 79 older persons who had received recommendations to stop driving either before or during assessment in a memory disorder clinic, were surveyed using a standardized telephone questionnaire.

Results: 6 (7.6%) of the study subjects were still driving despite instructions to cease. Of the remaining subjects (N = 73), less than one-third (28.7%) used bus services and only 16.4% used Para-Transpo (a system of public transportation for the disabled). Most (86.3%) relied heavily on family for transportation. This was perceived as a moderate-to-severe increase in caregiver workload in 45% of cases. Although shopping and appointments were among the most frequently cited reasons for past driving, respondents were more likely to believe that participation in leisure activities had been most affected by driving cessation.

Conclusion: Once a senior's driving privileges have been revoked, a significant burden is imposed on family members. In most cases, the public transportation system cannot adequately support persons with dementia or their caregivers. This places family members at risk for increasing caregiver stress. Furthermore, it is the ability to attend leisure activities rather than instrumental activities of daily living which is most limited. This may contribute to social isolation and depression for persons with dementia.

Key words: Memory disorder, quality of life, leisure activities, caregiver, older drivers, elderly

Research performed at The Ottawa Hospital – General Campus, 501 Smyth Road, Ottawa, ON K1H 8L6.

Correspondence to: Nahid Azad, MD, FRCPC, Geriatric Assessment Unit, The Ottawa Hospital – Civic Campus, 1053 Carling Ave., Ottawa, ON K1Y 4E9. Fax: (613) 761-5334; e-mail: nazad@ottawahospital.on.ca

INTRODUCTION

North American seniors have become increasingly dependent on the private automobile as their primary means of transportation. Currently, 28% of U.S. drivers are over 55 years of age, and by the year 2050 it is expected that 39% will be in this age group.¹ The proportion of drivers over the ages of 65 and 75 are increasing in a similar fashion.

This raises concern, because motor vehicle crashes are the leading cause of accidental death for those aged 65-74 and are second, after falls, for those >75.² Although older drivers are known to use compensatory strategies, such as self-restricting driving to daylight hours, avoiding rush hours and decreasing overall driving mileage, drivers >69 are still twice as likely to be involved in a fatal crash compared with the middle-aged driver.^{3,4} Numerous studies have identified factors associated with driving cessation which include age-associated factors such as decline in overall health and specific medical conditions (e.g. stroke, Parkinson's disease, Alzheimer's dementia, and visual disorders).⁵

While it is acknowledged that driving cessation may be unavoidable in many instances, the loss of driving privileges and the resultant impact upon one's daily life is an issue of growing concern among those who work with seniors.^{6,7} Marottoli et al^{8,9} have demonstrated that driving cessation leads to a worsening of depressive symptoms and decreased out-of-home activity levels. Consequently, we must be careful to avoid prematurely restricting driving privileges, and if cessation of driving is inevitable, we must provide suitable alternative means of transportation.

The objective of this survey was to assess the

impact of driving cessation on older drivers who had attended a memory disorder clinic and had received instructions to cease driving.

DESIGN AND METHODS

Older individuals who had received instructions to stop driving at least 6 months before the study, were identified via systematic chart reviews of patients who had attended one of three memory disorder clinics (2 in Ottawa, ON and 1 in Cornwall, ON). The older drivers had been notified that they should cease driving either before the clinic visit or during the clinic assessment. These patients and/or their caregivers were interviewed via a standardized telephone interview. All interviews were conducted between June and August of 1995 by a single interviewer, and no individual declined the interview.

Data were analyzed using the descriptive statistics feature of SPSS-PC.

RESULTS

The initial sample contained 79 individuals, with average age 75.3 years (range 60-86); 52% were male. Six (7.6%) of the original 79 cases continued to drive despite instructions to the contrary. Four (66.7%) of these six "persistent drivers" (i.e. non-compliers) were male, 5 (83.3%) were married, and 4 (66.7%) were urban drivers. These six "persistent drivers" were excluded from subsequent analysis which focused on the impact of driving cessation.

The remaining analysis will report on the results of the 73 individuals who ceased driving. Most subjects (57.5%) had a prior driving frequency of at least a few times per week (Table 1). Over two-thirds (67.1%) gave up driving based on the recommendation of a physician, and 16.4% reported giving up driving voluntarily because of health concerns such as vision impairment or stroke (i.e. before the physician's formal recommendation that they no longer drive). Other reasons for driving cessation appear in Table 2. Thirteen subjects (17.8%) had been involved as a driver in a *motor vehicle crash* (MVC) in the year preceding the memory disorder clinic assessment. Four of these subjects (5.5%) had been involved in multiple MVCs during that year, and 9 subjects (12.3%) had been in major MVCs (Table 3).

The reasons for prior driving were split between necessary tasks (e.g. shopping) and leisure activi-

ties (Table 4). A variety of compensatory strategies were employed (Table 5). Twenty-nine percent of subjects used bus services, and 16.4% used Para-Transpo (assisted public transportation for the disabled). The most frequent complaint about the bus system was that it was inaccessible to those with mobility problems. Complaints regarding Para-Transpo included the need for 24-hour advance booking and unreliable arrival times. Both modes of transportation were either unavailable (e.g. Para-Transpo) or impractical (e.g. regular bus) for patients with moderate to advanced memory impairment. Public transportation was not available in many rural communities – this affected 17.8% of patients.

Almost half of respondents (45.2%) indicated that the senior's loss of license had a moderate-to-severe impact upon the caregiver's or the family's workload (Table 6). These figures are consistent with the finding that for 86.3% of the participants, "family/spouse" was cited as responsible for providing transportation following loss of license (Table 5).

Although shopping and appointments were among the most frequently cited reasons for past driving, respondents were more likely to believe that participation in leisure activities, and not Instrumental Activities of Daily Living (IADLs), had been most affected by the loss of license (Table 6).

DISCUSSION

There are many reasons why older persons may need to refrain from driving, with a very common reason being the progression of a dementia. This survey of older persons who had attended a memory disorder clinic and had received directions to cease driving, indicates that the loss of a driver's license had a significant negative effect on their lives and the lives of their caregivers.

Surprisingly, more respondents listed a negative impact on leisure activities than on IADLs. Given their increased reliance upon others for transportation, it is possible that seniors were reluctant to ask for assistance in getting to activities that may have been viewed as being non-essential. Unfortunately, these may be the very activities that enhance social support, permit social integration and add significantly to quality of life.

The majority of subjects in this study suffered from cognitive impairment. Consequently, the

Table 1. Driving pattern before cessation of driving (N=73)

	N	%
PRIOR DRIVING PATTERN		
Occasional (1-2 times a week)	30	41.1 %
Frequent (few times a week – every day)	42	57.5 %
Unknown	1	1.4 %
LOCATION OF PRIOR DRIVING		
Urban Driver	37	50.7 %
Rural Driver	11	15.1 %
Urban and Rural	25	34.2 %

Table 2. Reasons for driving cessation (N=73)

	N	%
MD recommendation	49	67.1 %
Voluntarily due to health issues	12	16.4 %
Family pressure	3	4.1 %
Failed driving test	3	4.1 %
A Ministry of Transportation letter	2	2.7 %
Motor vehicle accident	2	2.7 %
Unknown	2	2.7 %

Table 3. Involvement in Motor Vehicle Crashes (MVCs) in the year before attending the memory disorder clinic (N=73)

	N	%
NUMBER OF MVCs IN PRECEDING YEAR		
1	9	12.3%
2	2	2.7%
3	1	1.4%
4	1	1.4%
Total	13	17.8%
RESPONDENTS OPINION OF SEVERITY OF MVC		
Major	7	9.6%
Minor	4	5.5%
Both (multiple MVC's)	2	2.5%

Table 4. Reasons for and importance of driving as perceived by the patients (multiple responses permitted, N=73)

	N	%
REASONS FOR DRIVING		
Shopping	66	90.4 %
Appointments	55	75.3 %
Socialization	54	74.0 %
Pleasure	47	64.4 %
Meals	42	57.5 %
IMPORTANCE OF DRIVING		
Practical reasons	59	80.8 %
Emotional reasons	59	80.8 %
Psychological	38	52.1 %
Sense of Isolation	36	49.3 %
Sense of Security	5	6.8 %
Self-esteem	40	54.8 %
Not important	11	15.1 %

Table 5. Formal and informal means of transportation following loss of driving license (multiple responses permitted, N=73)

	N	%
Assisted by		
Family/Spouse	63	86.3 %
Friend	15	20.5 %
Neighbour	6	8.2 %
Volunteer	4	5.5 %
Bus		
Uses regularly or occasionally	21	28.7 %
Available, but does not use	9	53.4 %
Not available	13	17.8 %
Para-Transpo		
Uses regularly or infrequently	12	16.4 %
Available but does not use	48	65.8 %
Not available	13	17.8 %
Taxi		
Uses regularly or infrequently	24	32.9 %
Available, but does not use	38	52.1 %

Table 6. Impact of driving cessation on family, caregiver and on outings (N=73)

	N	%
EFFECT ON FAMILY AND CAREGIVER		
Mild	29	39.7%
Moderate	21	28.8%
Severe	12	16.4%
No effect	11	15.1%
PRIMARY EFFECT ON ACTIVITIES		
IADL*	30	41.1%
Leisure	43	58.9%

*IADL – Instrumental activities of daily living, i.e. shopping, banking, appointments.

results of this survey cannot be generalized to the senior population at large. Nevertheless, the findings do support the need for future studies into alternative means of transportation. Existing services such as Para-Transpo are restricted to persons with specific limitations (e.g. unable to walk 175 meters, etc.), but with relatively intact cognition. Many seniors may not qualify for this type of service and hence may remain dependent on family for transportation. Lack of suitable transportation alternatives may lead to social isolation, which in turn may increase the risk of depression and further loss of independence.

Recommendations are needed for seniors to start planning early for the day when they can no longer

drive.¹⁰⁻¹² Discussions regarding mobility and transportation issues should be encouraged. Resources such as the Ottawa Driving Assessment Toolkit (rgapottawa.com) can assist family physicians in addressing these issues and should be considered for development in other centres. Social isolation and caregiver stress can be minimized with services that are presently available in the community (e.g. home care, meals-on-wheels, support groups, volunteer driver networks, and the Alzheimer Society).

Johnson¹³ has demonstrated that social supports are especially crucial for older rural drivers who have lost their driving privileges. This is likely due to the relative lack of public transportation in the rural setting and stresses the need for future research to pay particular attention to the older rural driver.

Some of the findings of this study have specific relevance to the operations of memory disorder clinics. The finding that 6 subjects (7.6%) who had received instructions to cease driving continued to drive is extremely disconcerting, because this places the person with dementia, their family and the general public at significant risk. This indicates that physicians should formally report patients to their ministry of transportation rather than entering into a verbal agreement that the patient will stop driving, that the recommendation to stop driving and the persons who received this recommendation should be explicitly documented in the patient's chart and in consultation notes, that the Family MD should be notified when driving cessation has been recommended, and that memory disorder clinics should develop protocols to routinely follow-up on the driving status of those patients who have been told to stop driving. Furthermore, the fact that most of the six "persistent drivers" (i.e. non-compliers) were married and living in urban areas suggests that family members must be involved in the discussion regarding driving cessation, and that more guidance regarding alternative means of transportation and support services is required.

The finding that 17.8% of subjects had been involved in MVCs in the year prior to attending the memory disorder clinic, indicates the need for improved early screening in the primary care setting. Unfortunately, practical (i.e. clinically sensible) screening tools for driving safety that can be applied in the primary care setting do not exist. The CIHR (Institute on Aging) has recently awarded a 5-year New Emerging Team grant to the

CanDRIVE team to develop and validate such driving screening tools for the primary care setting. The mandate of the CanDRIVE program also includes the development of a national team of researchers to further investigate the impact of loss of driving privileges and to explore means either to delay loss of licensure or to minimize the negative impact of loss of driving privileges. Further information regarding the mandate and evolving plans of the CanDRIVE program will be available on the program website (CanDRIVE.ca) in February 2003.

There are several limitations to this study. The interviews were conducted by telephone, and consequently there were several instances where the patient served as the respondent or the patient and caregiver were both involved. Future surveys should better separate patient and caregiver responses, because the perceptions of these two groups will likely differ. Unfortunately, it is not possible to differentiate caregiver from patient responses in our data. The generalizability of the results is also limited. The findings will likely vary significantly between memory disorder clinics, geriatric day hospitals and the primary care setting.

Despite the fact that precise estimates will vary with the clinical setting and the interview technique (i.e. patient vs. caregiver respondents), this study does highlight several important points. Patients being referred to memory disorder clinics may have already experienced motor vehicle crashes. This indicates a need for better screening in the primary care setting. Once driving cessation has been recommended, many older drivers will continue to drive. This supports the need for better education regarding alternative means of transportation and the need for routine follow-up of patients who have been advised to cease driving. The results of this survey support previous studies which indicate that the loss of driving privileges can have a negative impact on individuals and their caregivers. Public transportation, in its present form, does not adequately compensate for these losses, because it does not provide suitable alternative means of transportation for those suffering from dementia. The latter issue is particularly problematic in the rural setting.

Future research should focus on the development of primary care screening tools to assess driving safety and should explore means to extend the safe driving period (e.g. retraining, restricted licensing).

When driving cessation is unavoidable, then research into the impact of loss of driving privileges can provide the foundation for intervention studies designed to decrease the negative effect on seniors and their caregivers. When designing such interventions, we must keep in mind the importance of leisure activities demonstrated in this survey.

REFERENCES

1. Malfetti J. Drivers 55 Plus. Falls Church, VA: AAA Foundation for traffic safety 1985.
2. Waller PF. Preventing injury to the elderly. In: Phillips HT, Gaylord SA, eds. Aging and Public Health. New York: Springer Publishing Company, 1985: 106-46.
3. National Research Council, Transportation in an aging society. Washington, DC: Transportation Research Board 1988.
4. Marottoli RA, Ostfeld A, Merrill S et al. Driving cessation and changes in mileage driven among elderly individuals. J Gerontol 1993; 48: S255-60.
5. Persson D. The elderly driver: Deciding when to stop. Gerontologist 1993; 33: 88-91.
6. Bonnel WB. Giving up the car: Older women's losses and experiences. J Psychol Nurs 1999; 37: 10-5.
7. Johnson JE. Urban older adults and the forfeiture of a driver's license. J Gerontol Nurs 1999; December: 12-8.
8. Marottoli RA, Mendes de Leon CF, Glass TA et al. Driving cessation and increased depressive symptoms: Prospective evidence from the New Haven EPESE. JAGS 1997; 45: 202-7.
9. Marottoli RA, Mendes de Leon CF, Glass TA et al. Consequences of driving cessation: Decreased out of home activity levels. J Gerontol Soc Sci 2000; 55B: S334-40.
10. Triscott JA, McCracken PN, Dobbs AR. Assessment of the older driver. Can J CME 2001; January: 173-84.
11. Gillins L. Yielding to age: When the elderly can no longer drive. J Geriatr Nurs 1998; 16: 12-5.
12. Bahro M, Silber E, Boz P et al. Case Report: Giving up driving in Alzheimer's disease – an integrative therapeutic approach (Case Report). Int J Geriatr Psychiatr 1995; 10: 871-4.
13. Johnson JE. Older rural adults and the decision to stop driving: The influence of family and friends. J Community Health Nurs 1998; 15: 205-16.

Dr. Molnar is supported by the CIHR (Institute on Aging) funded **Canadian Driving Research Initiative for Vehicular Safety in the Elderly (CanDRIVE)** New Emerging Team program.

The authors thank Marion Agnew for technical assistance and Lynn Kachuik for review of the manuscript.

BOOK

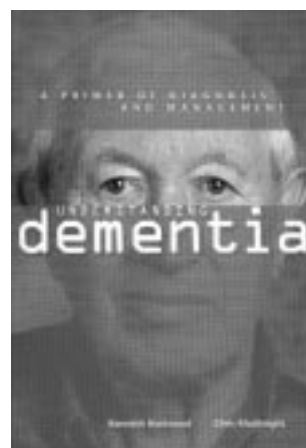
Understanding Dementia: A Primer of Diagnosis and Management

Kenneth Rockwood, MD, FRCPC, Professor
Chris MacKnight, MD, MSc, FRCPC, Assistant Professor
Division of Geriatric Medicine, Dalhousie University,
Halifax, Nova Scotia

Publisher: Pottersfield Press, 2001, Halifax, NS
205 pp, with Index. ISBN 1-895900-15-8
Cost \$39.95 + 7% GST soft cover

Order from:

Online: demetiaguide.com
Email: orders@dementiaguide.com
Telephone: (902) 488-4980



Provides a step by step approach to those presenting with a complaint of impaired memory. The book's text, figures and cases provide a pragmatic guide for potential interactions that can be structured over one to five visits.